

City of Belmont
Neighborhood Traffic Calming Program

I. TABLE OF CONTENTS

I. TABLE OF CONTENTS.....	1
II. EXECUTIVE SUMMARY	3
FLOW CHART.....	7
III. NEIGHBORHOOD TRAFFIC CALMING PROGRAM	8
1. Introduction	8
2. Program Objectives	8
3. Policy Guidelines	11
4. Implementation Process	14
5. Traffic Management Elements	18
6. Funding.....	20
APPENDIX A – Toolbox of Traffic Calming Measures.....	21
APPENDIX A – Toolbox of Traffic Calming Measures.....	22
APPENDIX B – Summary of Speed Survey Data.....	30
APPENDIX C – Petition for Traffic Calming	32
APPENDIX D– Speed Hump Policy	34

II. ACKNOWLEDGEMENTS

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III. EXECUTIVE SUMMARY

On December 14, 1999, the Belmont City Council directed the Public Works Department to form a Traffic Calming Task Force. The first Task Force meeting was held on March 9, 2000. There were a total of 7 meetings where the content of this program was discussed and workshops examined the application of traffic calming. The final two meetings on June 15, 2000 and June 29, 2000 focused on finalizing the Final Draft Neighborhood Traffic Calming Program to be ready for Planning Commission review on July 18, 2000 and City Council adoption on July 25, 2000.

Objectives

The objective of a Traffic Calming Program is to calm traffic, as opposed to controlling traffic. Devices such as signs, striping, pavement messages, traffic signals and police enforcement control traffic, according to laws, rules and regulations passed to legally control the conduct of drivers. Traffic calming consists of physical measures designed to influence the behavior of drivers.

The Neighborhood Traffic Calming Program deals with residential and collector streets only. The primary objective of this program is to enhance the safety and livability of Belmont's neighborhood streets. The program enables the City of Belmont to respond to neighborhood traffic issues using a defined formal process.

Measures

Traffic calming measures are "self-enforcing" because they influence behavior. The measures are effective because drivers instinctively comply. Traffic calming measures work 24 hours per day, 7 days per week. The new "toolbox" of physical traffic calming measures has been successful in communities around the world.

The current focus of traffic calming is to alter the physical shape of the roadway to inhibit speed. This is accomplished by vertical (such as speed humps) and horizontal (such as narrowing the street) measures which make the roadway more difficult to travel at high speed, either because of discomfort or the need to maneuver the vehicle more in order to negotiate the street.

Definitions

The following definitions shall be used to clarify the Neighborhood Traffic Calming Program.

- **Core Street:** The Core Street is the street where the proposed traffic calming devices are proposed or are being installed.

- Affected Area: The Affected Area is the Core Street plus any cul-de-sac that uses the Core Street as its only access and the intersecting streets within 300 feet of the centerline of the Core Street.

Criteria

The minimum criteria for installation of traffic calming measures on the Core Street are:

- “Critical” speed in excess of 32 mph on local streets and greater than 8 mph over the posted speed on collector streets
- “The acceptable traffic volume traveling along a Core Street segment shall be calculated based upon trip generation rates for the total number of dwelling units and other land uses that are on the Core Street segment plus the land uses on any side street that must use the street segment to access the area residents’ property. The Institute of Transportation Engineers Trip Generation Manual shall be used to determine the trip generation rates for the land uses. Traffic calming will be considered if the measured traffic volumes exceed the acceptable traffic volume by 20 percent.”

Speed

The most commonly used speed criteria for traffic calming is the “85th Percentile” or “Critical” speed, which is the speed only 15% of drivers exceed. If the 85th Percentile exceeds the speed limit, usually 25 mph on residential streets, by a set amount, traffic calming is appropriate.

The criteria followed by this program will have as its primary objective the reduction of critical speeds.

Volume

Traffic calming installations also reduce traffic volumes by making a route less attractive as a high traffic street. By making the Core Street appear to be a neighborhood street or a pedestrian friendly street, motorists will be less inclined to use the street as a through roadway. This is accomplished by measures which add pedestrian linkages and landscaping along the roadway.

Traffic volumes are measured by Average Daily Traffic (ADT). Residential streets are designed to accommodate peak hourly volumes of traffic for all the dwelling units on the Core Street or must use the Core Street.

Cut-Through Traffic

Both speed and volume reduction measures apply to streets with significant “cut-through” volumes. By making the Core Street take longer, or appear to handle less traffic,

“cut-through” traffic will return to the collector or arterial which was designed to accommodate the traffic volumes.

Emergency Response Routes

Many of Belmont’s neighborhood streets are designated emergency response routes. Emergency vehicles are affected most by vertical measures, those which cause a vehicle to experience an uncomfortable vertical movement. Measures sufficient to cause discomfort to automobiles will cause a serious effect on much larger vehicles, such as fire engines, and medical emergency vehicles carrying patients.

Impacted Areas

A traffic calming measure installed to solve a problem in one location may move the problem to another location. This is not a desirable or acceptable result. City staff will evaluate the impact of implementing traffic calming at the requested location or area on adjacent intersections, street sections or street systems.

Speed Hump Policy

The City of Belmont passed a Speed Hump Policy on April 9, 1996 (see Appendix D). The policy prohibits speed humps on designated local emergency vehicle routes.

The Speed Hump Policy may be revisited in the future based on new technologies for vertical measures, such as speed cushions, split speed humps, speed tables and raised intersections. Revisions to this policy will require separate action by City Council in cooperation with the South County Fire Department and the Belmont Police Department.

Priority

The City of Belmont program will initially be request driven, where priority will be based on the date of the request.

Quality

This program recommends that the low budget designs for traffic calming measures will usually not be appropriate in Belmont. The high aesthetic/low maintenance designs should be proposed for all traffic claming measures

Implementation Process (See Flow Chart Page 8)

When a request for traffic calming is received, staff first determines whether a simpler procedure could be used. The City will make an effort to resolve an identified traffic issue without having to embark on the traffic calming process.

Application / Petition

A request for traffic calming must be received from a neighborhood association or by a petition signed by two-thirds (67%) percent of the affected households on each block of the Core Street.

Study Phase

A letter is sent to all households within the Affected Area to notify residents that a project is beginning, to share the data gathered so far, and to ask if there are other traffic issues that should be addressed. Traffic data, including speeds, volumes and accident history will be routinely collected for each traffic calming request. A residents meeting will also be held to discuss the project, and determine the expectations of the proposed traffic calming program. Working groups to develop traffic calming plans will be formed.

Survey Phase

The preferred plan and alternative(s) are mailed to Affected Area residents along with announcement of a meeting. Staff prepares a survey for residents asking if they would support undertaking a six-month trial. Two-thirds (67%) of the respondents representing at minimum of 90 percent of all of the Affected Area must support the proposed trial installation. Staff prepares an environmental assessment to help assess impacts during the trial.

Trial Phase

Staff prepares a report to the Planning Commission in order to request approval to conduct a trial of the traffic calming plan. The recommendations of the Commission are then forwarded to the City Council for final approval. The detailed plan for the trial is then designed and constructed. The typical trial period will be six months.

Permanent Installation

After six months, staff evaluates the results of the trial plan. Staff distributes a survey to determine if residents believe that the trial was successful and if the project should be considered for permanent installation. Support must be indicated by a super majority (67+ percent) of survey responses representing a minimum of 90 percent of the Affected Area.

Staff prepares a report to the City Council on the outcome of the trial plan. The City Staff recommends to the City Council if the trial plan should be removed, modified or made permanent. Final approval rests with the City Council. The permanent installation is designed constructed.

Removal

Removal of a previously approved traffic calming plan will require the same process be followed that was used to install the plan initially. Traffic calming measures may also be subject to removal for various reasons, including conformity with the Americans with Disabilities Act (ADA), impacts on emergency services, accident problems, or safety problems determined by the Traffic Safety Committee.

Funding

City staff will attempt to obtain grant funding for any trial and/or permanent traffic calming installation. However, if no grants are available, the residents will be required to pay through voluntary contribute and/or a benefit assessment district. The cost of maintaining any installed devices above and beyond normal city maintenance (i.e. curb painting, street cleaning, etc.) by City staff shall be included. Funding for permanent installations will be considered by the City Council after successful completion of trial installations. If residents desire to speed up the final construction process, the City will consider full (not partial) resident or property owner funding of a traffic calming project.

Maintenance

The City has determined that high aesthetic/low maintenance designs are preferred to reduce the future burden on City forces to maintain traffic calming measures. These type of measures will include landscaping and irrigation systems, both of which require continuous maintenance in perpetuity.

If residents desire to speed the final approval of project funding by reducing the long term fiscal impact of the project, individual property owners, groups of property owners or a homeowners association may “adopt” the traffic calming landscaping and irrigation.

FLOW CHART

1. Introduction

The City of Belmont receives numerous requests from residents for solutions to traffic issues. These often consist of requests to install stop signs at intersections to slow traffic. Most of these requests are processed through the City's Traffic Safety Committee, which is made up of staff from the Belmont Police Department, South County Fire Department and the Belmont Public Works Department. The Traffic Safety Committee is responsible for issues of traffic safety, and primarily uses standard traffic control rules and regulations to determine what traffic controls can be implemented. Among these regulations are the requirements that standard warrants be met for installation of stop signs and other traffic control measures. Normally stop signs do not meet warrants when the main issue is speed control. This has led to some frustration among Belmont residents, and a call for other solutions to traffic speeding issues.

Definitions

The following two definitions shall be used throughout the Neighborhood Traffic Calming Program:

Core Street: The Core Street is the street where the proposed traffic calming devices are proposed or are being installed.

Affected Area: The Affected Area is the Core Street plus any cul-de-sac that uses the Core Street as its only access and the intersecting streets within 300 feet of the centerline of the Core Street.

2. Program Objectives

The Neighborhood Traffic Calming Program deals with residential and collector streets only. The primary objective of this program is to enhance the safety and livability of Belmont's neighborhood streets. The program enables the City of Belmont to respond to neighborhood traffic issues using a defined formal process.

The obvious objective of a Traffic Calming Program is to calm traffic, as opposed to controlling traffic. Devices such as signs, striping, pavement messages, traffic signals and police enforcement control traffic, according to laws, rules and regulations passed to legally control the conduct of drivers. Traffic calming, on the other hand, consists of physical measures which change the roadway configuration, and are designed to influence the behavior of drivers.

Traffic calming measures are also designed to inhibit aggressive driving, making drivers want to drive slower in a neighborhood. In the past, special signs such as "Children at Play", "Our Neighborhood Cares" and "Please Drive Slowly" were used to try to influence driver behavior, with little success. The new "toolbox" of physical traffic calming measures has been successful in communities around the world.

Traffic control devices require continuous enforcement, with the threat of punishment for violation, in order to be effective. Traffic calming measures are “self-enforcing”. Because they influence behavior, the measures are effective because drivers instinctively comply. Enforcement of traffic control only works when enforcement or threat of enforcement is present. Traffic calming measures work 24 hours per day, 7 days per week.

2.1. Travel Speed

The focus of traffic calming is to alter the physical shape of the roadway to inhibit speed. This is accomplished by vertical measures (such as speed humps) and horizontal measures (such as narrowing the street) that make the roadway more difficult to travel at high speed, either because of discomfort or the need to maneuver the vehicle more in order to negotiate the street.

There are several methods to measure speed trends for neighborhood streets. The most commonly used method is the “85th Percentile” or “Critical” speed, which is the speed that 15% of drivers exceed. Speed studies routinely use this method to determine the speed limit, therefore often “Critical” speeds do not exceed the speed limit by more than 5 mph. Traffic calming programs often use this measurement method as criteria for determining whether to implement traffic calming. If the 85th Percentile speed exceeds the speed limit, usually 25 mph on residential streets, by a set amount, traffic calming is appropriate.

Local streets have a prima facie speed limit of 25 mph. Speed limits on collector streets are set to the nearest 5 mph increment of below the “Critical” speed. This program uses a critical speed of 7 mph over the prima facie speed as the criteria for implementing traffic calming on local streets and 8 mph over the posted speed on collectors.

2.2. Traffic Volume

Another objective of traffic calming installations is to reduce traffic volumes by making a route less attractive as a high traffic street. By making the street appear to be a neighborhood street or a pedestrian friendly street, motorists will be less inclined to use the street as a through roadway. This is accomplished by measures which add pedestrian linkages and landscaping along the roadway.

Local streets are designed to accommodate the trips generated by the dwelling units along the particular street and all the dwelling units where the only access to their property is to travel along a particular street.

Many jurisdictions use a minimum volume threshold of 1000 vpd to determine if traffic calming is appropriate.

2.3. Cut-Through Traffic

Both speed and volume reduction measures apply to streets with significant “cut-through” volumes. By making the residential street take longer, or appear to handle less traffic, “cut-through” traffic will return to the collector or arterial which was designed to accommodate the traffic volumes.

It is harder to measure “cut-through” volumes because each vehicle’s origin and destination (O/D) must be determined. This is measured by several types of O/D studies, such as license plate surveys (compare plates at each end of the street), manual surveys (stop each car and ask), and post-card surveys (mail-in of post-cards handed out at check points along the route).

When evaluating “cut-through” volumes, the percentage of traffic from outside the neighborhood going to a destination outside the neighborhood is measured. The evaluation must also include whether there is an alternative route using arterial roadways which should be used. Traffic calming can then be approved to encourage use of the appropriate route.

Normally a non-neighborhood volume of 10-20% is considered “normal” for most streets. Streets where cut-throughs are a problem will usually exhibit cut-through volumes in excess of 20%. This program seeks to reduce “cut-through” volumes to below 20%.

2.4. Emergency Response Routes

In Belmont, accommodation of emergency response routes has a significant effect on the ability to install traffic calming measures. Many of Belmont’s neighborhood streets are also emergency response routes because Belmont does not have a clearly defined hierarchy of collector and residential streets. Many neighborhood streets connect directly to the arterial roadways, Ralston Avenue, Alameda de las Pulgas, El Camino Real and Old County Road. Therefore, many residential streets are designated emergency response routes.

Emergency vehicles are affected most by vertical measures, those which cause a vehicle to experience an uncomfortable vertical movement. Measures sufficient to cause discomfort to automobiles will cause a serious effect on much larger vehicles, such as fire engines. These measures can also have a serious effect on medical emergency vehicles carrying patients.

The end result of these increased effects on emergency vehicles is that the vehicles must slow down to negotiate the vertical measures. This in turn will increase the emergency response time. In urban portions of San Mateo County, the maximum, mandatory (i.e. contractual obligation) response time for the first-responding Paramedic-staffed fire company is 6 minutes, 59 seconds to 90% of all medical emergencies. In Belmont, San

Carlos, and the Harbor Industrial Area, the governance-adopted performance standard for emergency response is a maximum travel time for the first-arriving fire company of 5 minutes to 80% of all emergency incidents. Failure to meet these response/travel times may require the creation of an additional staffed fire company, the construction of an additional staffed fire station, or similarly costly remedies.

2.5. Impacted Areas

Another factor in determining where to apply traffic calming is to determine the area which has a traffic problem. Sometimes it is a single “spot” location, such as an intersection; sometimes an entire street; but it may also be a network of parallel or interconnected streets (a street system). Normally the application will determine the extent of the area impacted. However, staff will review the application to determine if a smaller or larger impacted area is appropriate. A traffic calming measure installed to solve a problem in one location may move the problem to another location. This is not a desirable or acceptable result, except when traffic is moved from residential streets to arterials, which are expected to have more traffic.

An application for traffic calming will usually request that a particular area be considered. City staff will evaluate the impact of implementing traffic calming at the requested location or area on adjacent intersections, street sections or street systems. If installation of the measure will merely move the problem, either a more comprehensive traffic calming system will be considered, or no traffic calming will be allowed. If a more comprehensive system is required to solve the problem, the larger system must meet all the requirements of this program.

In some cases the impacted area may include another jurisdiction, such as San Carlos, San Mateo, Redwood City, San Mateo County or the State of California. In those cases, every effort will be made to involve the other jurisdiction, both staff and residents, to evaluate impacts.

3. Policy Guidelines

3.1. Eligibility

When an application for traffic calming is received, it will be evaluated to determine if the impacted area is eligible for traffic calming. Eligibility includes meeting threshold criteria that determine whether traffic calming is likely to be the solution. It will also evaluate the engineering aspects to determine if there is a practical safe solution at a reasonable cost which solves the problem without creating more problems. The solution may also be modified by special considerations, especially emergency response needs.

3.1.1. Criteria

- As discussed in the Objectives section above, the minimum base criteria for installation of traffic calming measures on the Core Street are:

- “Critical” speed in excess of 32 mph on local streets and greater than 8 mph over the posted speed on collector streets

“The acceptable traffic volume traveling along a Core Street segment shall be calculated based upon trip generation rates for the total number of dwelling units and other land uses that are on the street segment plus the land uses on any side street that must use the street segment to access the area residents’ property. The Institute of Transportation Engineers Trip Generation Manual shall be used to determine the trip generation rates for the land uses. Traffic calming will be considered if the measured traffic volumes exceed the acceptable traffic volume by 20 percent.”

3.1.2. Engineering

A focused speed and volume survey will be conducted on the Core Street when an application is received at the location of the requested traffic calming installation.

A cut-through volume survey on the Core Street will only be conducted if specifically requested, or if staff believes that excessive cut-through volumes are present.

City engineers, or consultants hired by the City, will prepare an engineering study, evaluating the impacts and effectiveness of each traffic calming measure, and combinations of measures, towards solution of the particular problem. The study will evaluate the geometry of the intersections and street sections to determine where and how measures can practically be installed. The study will include a cost estimate.

The study will evaluate the ability of vehicles, including large trucks, emergency vehicles, motorcycles and bicycles to negotiate the traffic calming system. Specialized computer programs, such as AutoTurn may be used for this evaluation. The study will also evaluate travel paths for bicycles and pedestrians. The engineering study will also evaluate the potential for impacts at locations other than the location being considered.

3.1.3. Safety

The eligibility criteria will also study the safety of the installation. The safety study will examine all aspects of improving safety and assuring that other safety aspects are not diminished. At a minimum, the safety study will examine:

- Traffic safety, such as visibility of obstructions
- Sight distance, such as the ability to see objects in the road ahead of a vehicle and traffic at corners
- Pedestrian safety, and
- Bicycle safety

3.1.4. Other Considerations

American with Disabilities Act (ADA)

A situation could arise in which a person with a disability protected by the ADA would be denied ingress or egress to the person's place of residence because of the impact of a traffic calming measure. That person should be able to reasonably demonstrate that the measure would aggravate the protected disability. In that situation, any traffic calming plan under consideration would need to be modified to provide an unobstructed route of ingress and egress to the person's residence.

Speed Hump Policy

The City of Belmont passed a Speed Hump Policy on April 9, 1996 (see Appendix D) which sets specific criteria for eligibility for speed humps based on street section and grade. The policy prohibits speed humps on designated local emergency vehicle routes. This policy has been interpreted to apply to all vertical traffic calming measures, and is maintained in this program.

The Speed Hump Policy may be revisited in the future based on new technologies for vertical measures, such as speed cushions, split speed humps, speed tables and raised intersections. Revisions to this policy will require separate action by City Council in cooperation with the South County Fire Department and the Belmont Police Department.

Samtrans

There are several bus routes through the City of Belmont on residential streets. Impacts to Samtrans equipment fleet will also be considered.

3.2. Priority

The City of Belmont program will be request driven, where priority will be based on the date of the request. If more than one request is received in a short period, i.e., the same day, ranking will be used to determine priority.

3.2.1. Visual Concerns

Negative visual concerns should be considered in the development of a traffic calming plan, especially considering the multiplication of the effect from a series of measures when viewed from the end of the street. Likewise, a positive aesthetic will multiply into an overall neighborhood enhancement. These visual considerations should be a part of residents decision making process in requesting traffic calming measures.

4. Implementation Process (See Flow Chart Page 8)

When a request for traffic calming is received, staff first determines whether a simpler procedure could be used, or whether the traffic problem is a traffic control issue, in which case it is forwarded to the Traffic Safety Committee. The Traffic Safety Committee will seek to resolve an identified traffic issue without embarking on the traffic calming process. During this decision process, the priority of the application will still be set by the original request date. See the section on staging below.

Multiple requests for locations on a street may be combined by staff into a single request for a street project. If staff determines that a project would be too large for the available budget, the project may be divided into increments if it is practical to do so. If a large project exceeds the budget and is not divisible, the project will be placed on the next Capital Improvement Plan request list for approval of budget from City Council. Staff will also seek outside funding for the project. See the funding section below.

4.1. Application / Petition

Receive request and determine eligibility and ranking.

A petition signed by 67 percent of the affected households along the Core Street. A household is defined as any owned or rented living unit with its own street address, regardless of how many people live in the unit. A traffic calming request may pertain to problems of speeding, volume, “cut-through” traffic, or accidents on residential streets.

Staff will begin work on traffic calming projects according to the project’s position in the project list and the staffing available. If a request involves an unusual accident history (as defined by six or more crashes, or one fatal crash, in the prior three consecutive years), the Traffic Safety Committee will examine this history and consider if the project should be moved up on the project list regardless of the date it was received and whether or not the speed and volume criteria have been satisfied

4.2. Study Phase

After receiving a request, staff collects data required to determine if the minimum eligibility criteria are met. Requests that meet the minimum criteria are placed on a project list according to the date they were received. The date of receipt is either the date of postmark, the dispatch date of an e-mail message, or the received date hand-stamped on a hand-delivered request. If the minimum criteria are not met and, if the problem can be addressed through other means, the City will take the best corrective action.

Staff will then determine the location or street segment(s) where traffic calming measures might be placed. Staff also determines whether any cross streets or adjacent parallel streets might be affected by traffic calming actions that might be taken. This larger area, consisting of the traffic calmed street, cross streets and/or adjacent parallel streets, is termed the “impacted area”.

A letter is then sent to all households within the Affected Area impacted area to notify residents that a project is beginning, to share the data gathered so far, and to set a public meeting to discuss the proposed project and expectations of the residents. Staff may add any new streets or segments to the project, based on the feedback obtained from this outreach. The standard 300-foot radius from the limits of the impacted area are also included in the public notification.

Collect Data

Traffic data, including speeds, volumes and accident history will be routinely collected for each traffic calming request. Additional data, possibly including a license plate survey to determine the extent of cut-through traffic, may need to be gathered at this point, depending on what other issues were raised in the initial interest survey.

Conduct Affected Impacted Area Meeting.

Residents of the project area are notified of the first meeting of residents within the impacted area. The purpose is to introduce the project and to identify any other traffic issues that should be addressed. The impacts of various traffic calming measures on the provision of emergency services will be specifically discussed. In addition, reasonable expectations of the outcome of the traffic calming will be discussed.

Volunteers are solicited to form a representative working group of all affected area that will meet separately to begin development of one or more traffic calming plans to address issues on the primary streets. Staff may develop one or more traffic calming concepts for presentation at this first meeting. One or more working group meetings are convened to refine the original plans and/or develop ideas for new plans. The working group continues to meet until agreement is reached on a preferred plan and one or more alternatives.

Any potential plan involving the use of vertical traffic calming measures (speed humps, speed tables, raised crosswalks, raised intersections) will take into consideration the needs of any person living in the project area who has a disability as defined in the Americans with Disabilities Act (ADA). Another meeting will be held with residents of the Affected Area to discuss the preferred plan. Minor modifications will be made to the plan.

4.3. Survey Phase

Conduct survey to determine if a trial should be implemented.

Staff prepares a survey for residents that describes the traffic calming measures proposed to be placed and asks if they would support undertaking a six-month trial. How the survey is conducted is determined by the type of traffic calming project. Because some

traffic calming projects will not fit neatly into the following categories, staff might need to vary the survey procedure to best-fit special cases.

All households within the Affected Area will participate in the survey. One response is allowed per household, regardless of the number of people in the household. In order for a trial to be considered for approval, a super majority (67 percent) of survey responses representing a minimum of 90 percent of the Affected Area must indicate support for the trial.

Staff prepares an environmental assessment to help assess impacts during the trial. City Council approval for a trial is required for these projects.

If the required resident support described above is not obtained, the procedure may either return to working group meeting to select another alternative and repeat the above procedure, or the process ends at this point.

4.4. Trial Phase

Approve Trial Installation

Staff prepares a report to the Planning Commission in order to request approval to conduct a trial of the traffic calming plan (including selection of the preferred alternative for the trial, if necessary). The Affected Area shall be notified of the meeting. The Commission listens to public testimony and discusses the proposed trial. The recommendations of the Commission are then forwarded to the City Council for final approval. If the Council does not approve the trial, the procedure may either return to working group meeting to select another alternative and repeat the above procedure, or the process will end at this point.

Design, implement and conduct approved trial.

The detailed plan for the trial is designed and either City forces construct the trial installation or bids are solicited for construction. The design effort may need to be contracted out, in which case bids would also need to be solicited for the design work. Traffic data is gathered before the trial is implemented, and at or near the end of the trial. The typical trial period will be six months.

4.5. Permanent Installation

Evaluate trial results and hold third impacted area meeting.

After six months, staff evaluates the results of the trial plan. Residents of the Affected area are notified by mail of the trial results. An optional third project area meeting may be held at which the results of the trial are discussed. The trail installation will remain until the permanent measures are installed or the decision is to remove the measures.

If staff determines that the trial was clearly not successful (e.g., traffic diversion is excessive, substantial resident complaints, accidents, substantial delays to emergency services), the procedure would return to working group meetings to make modifications and repeat the above steps. If it appeared that modifications could not be developed that would resolve the problem(s), staff would recommend to the City Council that the trial be abandoned. Further information about removing traffic calming measures is included below.

Conduct survey of residents regarding results of trial.

Staff distributes a survey to determine if residents believe that the trial was successful and if the project should be considered for permanent installation. The survey area includes residents and property owners in the entire impacted area. In order for staff to consider recommending to the City Council that the project be approved for permanent installation, support must be indicated by a super majority (67+ percent) of survey responses from the affected households with a minimum response of 90 percent of the Affected Area.

Review results of trial plan and decide on permanent installation.

Staff prepares a report to the City Council on the outcome of the trial plan. Residents and property owners of the Affected Area are notified. If the minimum project area support is not obtained, or if the plan was clearly not successful, staff will recommend removal of the trial traffic calming plan.

The City Council will receive public testimony, discusses the project, and will authorize trial plan be removed, modified or made permanent. If the Council does not approve proceeding with permanent installation of the traffic calming plan, the project ends at this point and the trial installation is removed, unless Council directs that the process return to select another alternative.

Design and implement permanent plan and conduct follow-up evaluation.

The permanent installation is designed and bids are solicited for construction. The design might also need to be contracted out, in which case bids would also need to be solicited for the design work. Meetings with residents may be needed for designs of permanent measures. City Council approval is required for consultant and construction contracts exceeding a certain amount. A follow-up evaluation of the effectiveness of the plan may be conducted up to three years after permanent installation.

4.6. Removal

Removal of a previously approved traffic calming plan, either of a trial before the trial period expires, or of a permanent installation after it is constructed, will require the same process be followed that was used to install the plan initially. This means that a

constructed improvement will require 67+ percent of impacted area households representing a minimum of 90 percent of the Affected Area.

Traffic calming measures may also be subject to removal at either the trial or permanent stages for various reasons, including conformity with the Americans with Disabilities Act (ADA), impacts on emergency services, accident problems, or safety problems determined by the Traffic Safety Committee. Depending on severity, all or a part of a traffic calming plan may be removed at the direction of staff for these reasons.

If traffic calming measures conflict with access to new development, it will be the responsibility of the developer to modify, relocate or remove the traffic calming measures. Removal should be a last resort, and a replacement public benefit will be required if traffic calming measures are removed.

4.7. Staging

Traffic calming measures vary from simple to complex, and from inexpensive to very costly. In the implementation process for any plan, simple traffic calming measures will be tried first. When a plan is developed, stages of implementation will be included. Trial installations will show which levels work. After permanent installation, if the follow-up surveys show the initial stages are not adequate, additional stages will be added, first as trial, then as permanent, according to the above process. The priority of all stages of a plan will date back to the original request.

5. Traffic Management Elements

There are four traffic management elements, described here, which are used to slow traffic on residential streets and to encourage correct driving behavior. The first three are currently in use in Belmont. The fourth, traffic calming, is covered by this program.

5.1. Education

Traffic speed education currently consists of three primary methods:

School Presentations – traffic safety officers conduct presentations at elementary, middle and high schools in the community. Elementary school presentations are geared towards keeping children safe, but also have an element of getting messages home to parents. Middle school and high school presentations are geared towards developing in new drivers a proper respect for traffic laws and understanding the dangers of inappropriate driving behavior.

Publicity – traffic safety programs at community events, flyers to residents, newspaper press releases and articles and cable TV broadcasts are all used to get the message to adult drivers of the dangers of speeding and other inappropriate driving behavior.

Speed Trailer – the Police Department will deploy the speed display trailer in areas where speed is a recurring problem. The trailer advises drivers how fast they are going, with a display showing the speed limit. This method is effective, but does not last when the speed trailer is removed.

5.2. Enforcement

Traffic enforcement duties are the primary responsibility of the Belmont Police Department. Directed Traffic Enforcement (DTE) is handled by uniformed patrol personnel who assist with traffic enforcement when not responding to other calls. DTE often results from a series of traffic complaints or from a request for Traffic Control or Traffic Calming as an early step in the process. DTE is determined either by the Police Department based on frequency of complaints or by the Traffic Safety Committee when a request is evaluated.

Traffic complaints received by the Police Department are reviewed by the Division Commander, logged for future reference and assigned to a unit for resolution. The Administrative Sergeant assigns the complaint to a uniformed officer who personally contacts the reporting party to discuss the matter and its resolution. Solutions can include education, DTE, radar speed trailer deployment, other enforcement as appropriate, or referral to the Traffic Safety Committee for traffic engineering of control or calming measures. Enforcement can result in a verbal warning or a citation, which is forwarded to the courts for disposition. Enforcement often includes elements of education and may lead to additional traffic engineering.

5.3. Traffic Control

Traffic control is the traditional method of controlling the speed of traffic. Traffic control consists of signs, striping, pavement markings and traffic signals. Traffic controls are authorized by state law and by local ordinance. Warrants are required for installation of regulatory traffic controls such as stop signs, speed limit signs and traffic signals. The City cannot add a stop sign, change a speed limit or add or modify a traffic signal without first conducting an engineering study to determine if warrants are met.

Traffic controls are a tool for controlling traffic speeds, but are not included in this program because they are adequately covered by standard traffic control manuals, such as the Traffic Manual (Caltrans) and the Manual of Uniform Traffic Control Devices (Federal Highway Administration).

5.4. Traffic Calming Measures

This program deals with the fourth element of traffic speed management, traffic calming. The toolbox of measures available for traffic calming are shown in Appendix A. Each measure has its own purpose and location on a street, or in a street system. Each application for traffic calming will evaluate the appropriateness of each measure based on

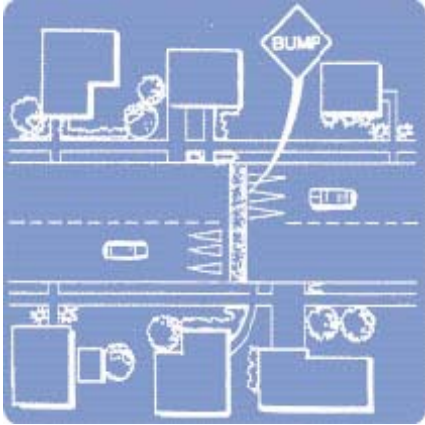
the physical nature of the street, and the current use of the street. Detailed design of each measure will follow established design guidelines used by other government agencies.

6. Funding

City staff will attempt to obtain grant funding for any trial and/or permanent traffic calming installation. However, if no grants are available, the residents shall be required to pay through voluntary contributions and/or a benefit assessment district. The cost of maintaining any installed device above and beyond normal City services (i.e. curb painting, street sweeping, etc.) shall be included.

If a voluntary contribution program is used, a deposit of 50 percent must be made before final design can begin, and the remaining 50 percent must be deposited before a construction contract can be advertised. Resident funding will be received only for approved traffic calming projects, with the purpose being to speed up permanent construction. Resident funding will not be used to speed up the qualification and study process or to qualify otherwise unqualified projects.

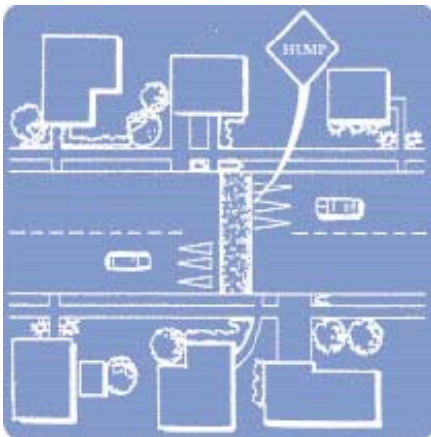
APPENDIX A – Toolbox of Traffic Calming Measures



Speed Bump
a.k.a. road bump

Speed bumps are short and abrupt rounded raised areas placed across the road.

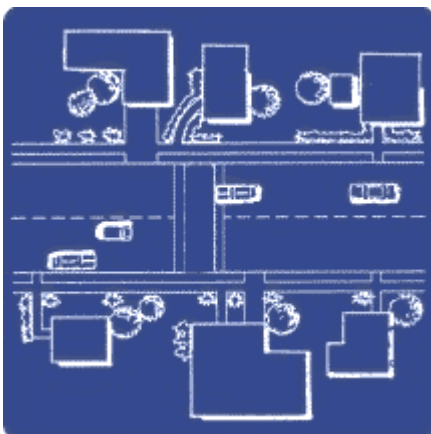
Cost Estimate:
\$1,500



Speed Hump
a.k.a. road hump, undulation

A speed hump is a longer and more rounded raised area placed across the road.

Cost Estimate:
\$2,000-2,500



Speed Tables
a.k.a. trapezoidal humps, speed platforms

Speed tables are flat-topped speed humps often constructed with a brick or other textured materials on the flat section.

Cost Estimate: \$2,500-\$3,000

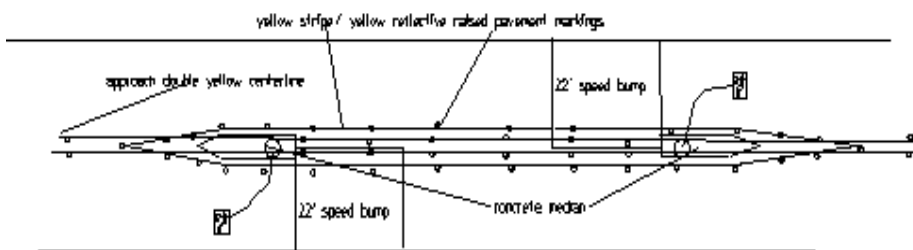


Speed Cushions

An improved form of speed hump which does not span the full width of the road. It has tapered edges and is wide enough to force cars to pass over at least part of the hump, while fitting within the axle width of buses and emergency vehicles.

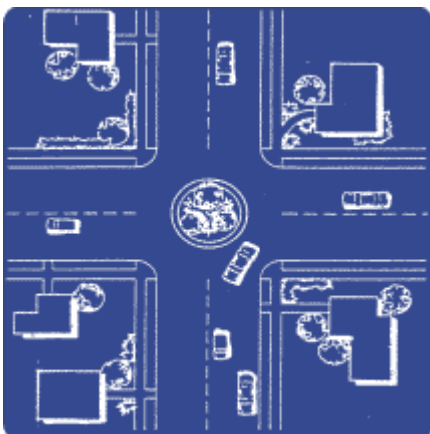
Cost Estimate: \$2,500-\$3,000

Split Speed Bump Plan



Split Humps

Cost Estimate:
\$3,000



Traffic Circles

a.k.a. intersection islands

Traffic circles are islands, placed in intersections, around which traffic circulates.

Cost Estimates:
\$5,000-\$8,000 Simple
\$15,000-\$40,000 High Aesthetic/
Low Maintenance



Roundabouts

a.k.a. rotaries

Roundabouts require traffic to circulate counterclockwise around a center island. Unlike traffic circles, roundabouts are used on higher volume streets to allocate rights-of-way among competing movements.

Cost Estimate: \$100,000 and up depending on size

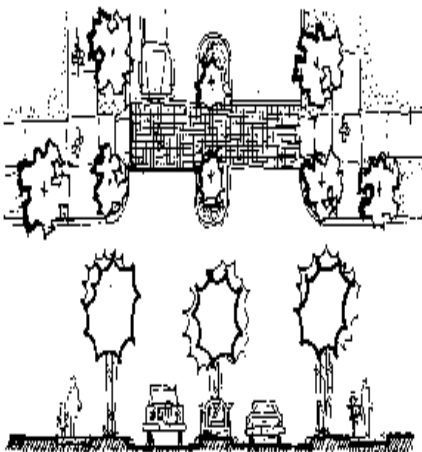


Neck Downs

a.k.a. nubs, bulbouts, knuckles, intersection narrowings, corner bulges, safe crosses

Neckdowns are curb extensions at intersections that reduce roadway width curb-to-curb.

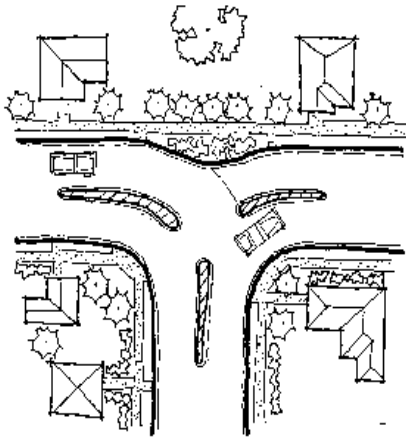
Cost Estimate: (set of 2)
\$4,000-\$5,000 simple
\$10,000-\$50,000 High Aesthetic/
Low Maintenance



Gateways

A special entrance feature, similar to a choker, that narrows a street at the intersection in order to reduce width of the traveled-way. Considered to be more dramatic and provide identity to a neighborhood.

Cost Estimate:
\$2,000-\$3,000 Simple
\$20,000-\$50,000 High Aesthetic/
Low Maintenance

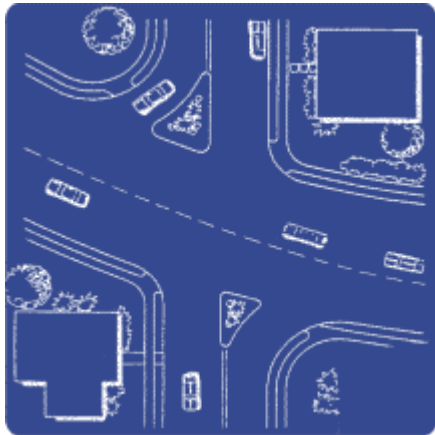


Channelizers

T-intersections are channelized so that vehicles are not traveling in a straight path. This has the effect of slowing vehicles down.

Cost Estimate:

\$10,000-\$15,000 Simple
 \$25,000-\$100,000 High Aesthetic/Low Maintenance
 (depends on size)



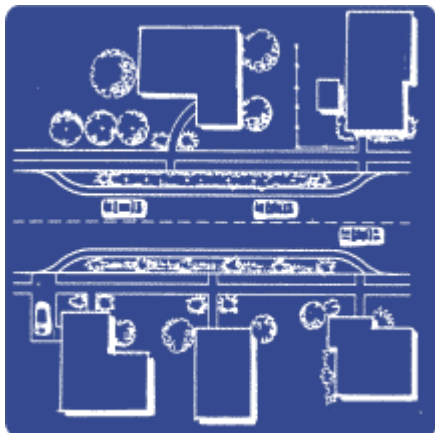
Forced Turn Islands

a.k.a. forced turn channelizations, pork chops, right turn islands

Forced turn islands are islands on approaches to an intersection that block certain movements.

Cost Estimate:

\$4,000-\$6,000 Simple
 \$20,000-\$30,000 High Aesthetic/Low Maintenance



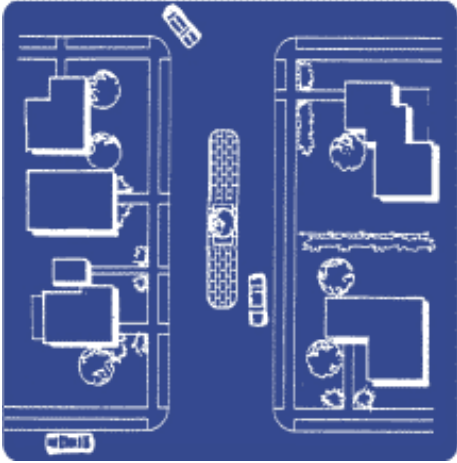
Chokers

a.k.a. pinch points, midblock narrowings, midblock yield points, constrictions

Chokers are curb extensions or islands on one or both sides of the street that narrow the street at that location.

Cost Estimate:

\$7,000-\$10,000 Simple
 \$20,000-\$50,000 High Aesthetic/Low Maintenance



Median Islands

a.k.a. midblock medians, median slowpoints, median chokers

Median Islands are islands located along the centerline of a street that narrow the street at that location.

Cost Estimate:

\$5,000-\$15,000 Simple

\$20,000-\$35,000 High

Aesthetic/Low Maintenance



Chicanes

a.k.a. deviations, serpentine, reversing curves, twists

Chicanes are curb extensions or islands that alternate from one side of the street to the other, forming S-shaped curves.

Cost Estimates:

\$14,000-\$20,000 Simple

\$25,000-\$50,000 High

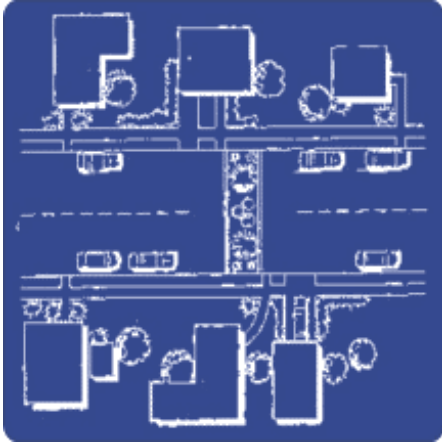
Aesthetic/Low Maintenance



Woonerf

Designed to enhance street use by pedestrians, children, bicycles and motor vehicles by using vegetative barriers, street curves, speed bumps and varying street surface materials.

Cost Estimates: Varies based on size and condition of street



Closures

a.k.a. cul-de-sacs, dead ends

Full street closures are barriers placed across a street to completely close the street to through-traffic, usually leaving only sidewalks open.

Cost Estimate:

\$5,000-\$10,000 Simple

\$80,000-\$100,000 High

Aesthetic/Low Maintenance
(i.e. Hallmark Drive)



Half Closures

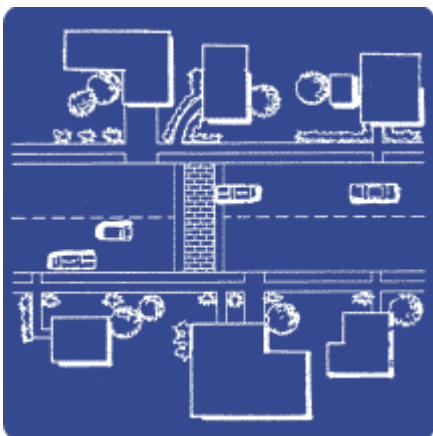
a.k.a. partial closures, one-way closures

Half closures are barriers that block travel in one direction for a short distance on otherwise two-way streets.

Cost Estimates:

\$3,000-\$5,000 Simple

\$10,000-\$15,000 High Aesthetic/
Low Maintenance

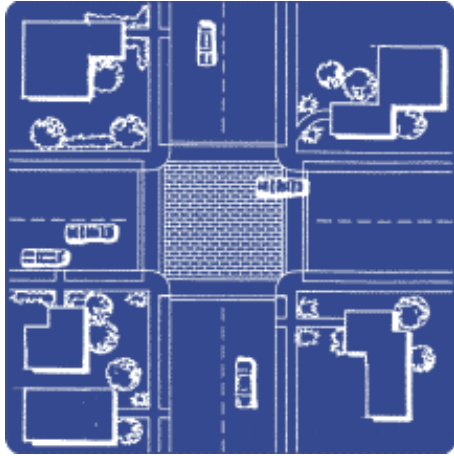


Raised Crosswalk

a.k.a. raised crossings, sidewalk extensions

Raised Crosswalks are speed tables outfitted with crosswalk markings and signage to channelize pedestrian crossings, providing pedestrians with a level street crossing.

Cost Estimate: \$2,500-\$3,000

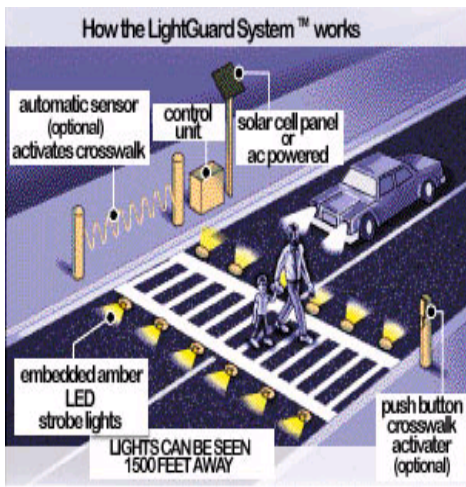
**Raised Intersection**

a.k.a. raised junctions, intersection humps, plateaus

Raised intersections are flat raised areas covering entire intersections, with ramps on all approaches and often with brick or other textured materials on the flat section.

Cost Estimate:

\$12,500 (Sarasota, FL)

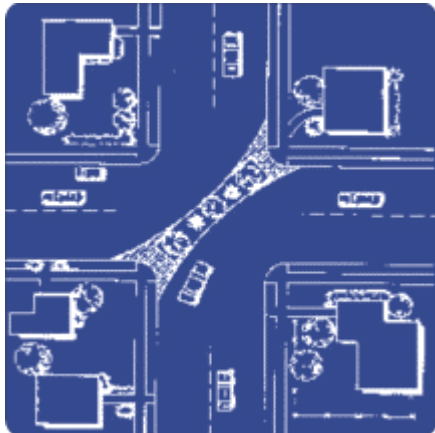
**Lighted Crosswalk**

a.k.a. automatic crosswalk

Strobe lights set into the pavement are activated by pedestrians warning motorists the crosswalk is in use.

Cost Estimates:

\$30,000-\$40,000

**Diverter**

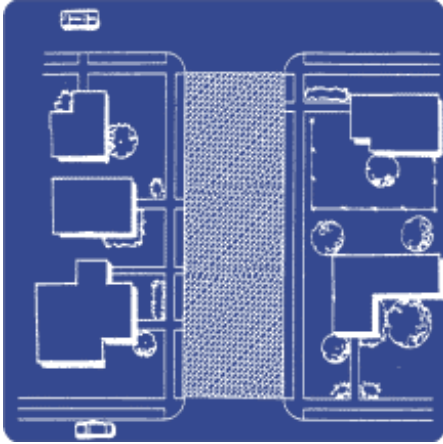
a.k.a. full diverters, diagonal road closures

Diverter are barriers placed diagonally across an intersection, blocking through movement.

Cost Estimate:

\$3,000-\$5,000 Simple

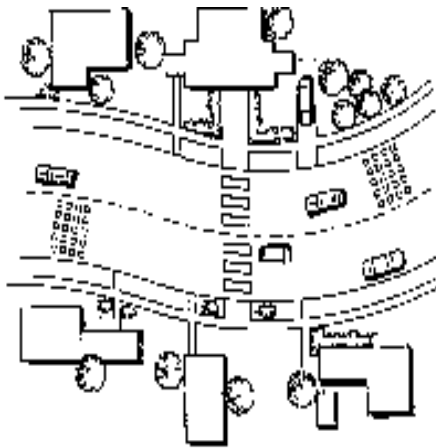
\$40,000-\$100,000 Large High Aesthetic/Low Maintenance



Textured Paving

Textured Pavements, such as brick or stone surfaces, cause drivers to have a slightly bumpy ride over an extended distance, while improving the aesthetic quality of the street environment.

Cost Estimate:
\$10,000-\$20,000



Rumble Strips *a.k.a. edge warnings*

Dots are glued to the pavement to create a strip that causes the vehicle to rumble as it traverses through them. This causes vehicles to slow down. Each installation costs less than \$500 for two approaches.

Cost Estimate:
\$500 per series



Offsets *a.k.a. lateral shift*

Offsets move traffic from one side of the road to the other, often alternating parking.

Cost Estimate:
\$1,000-\$2,000 striping
\$2,000-\$20,000 curbing

APPENDIX B – Summary of Speed Survey Data

APPENDIX C – Petition for Traffic Calming

APPENDIX D– Speed Hump Policy